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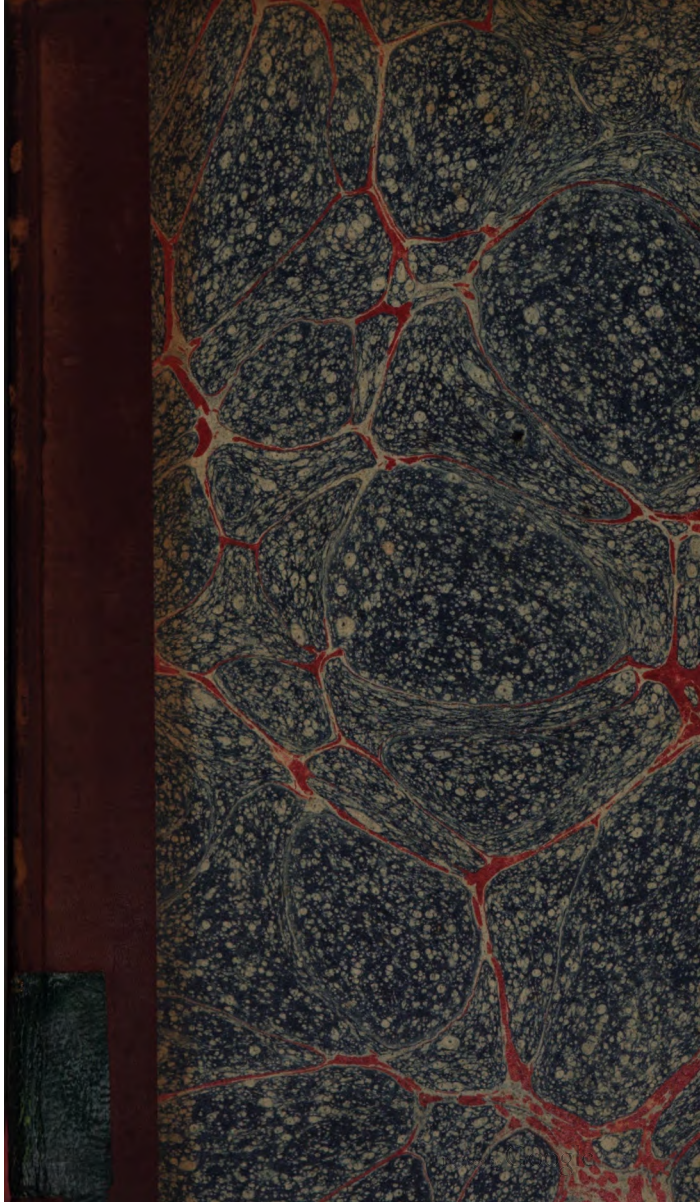
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THE
GREEN FIELDS
AND
THEIR GRASSES.

By ANNE PRATT



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PREFACE.

THE tribe of Grasses is so large that in a little work of this kind it is not possible to enumerate more than a small portion of their number. The author has therefore selected for notice such species as are common—such as make our meadows, and hills, and valleys green by their abundance. By the aid of the engravings, she hopes that the reader will be enabled to recognise many grasses familiar to him, and to gain some small knowledge of their history and uses. Of the grass-plants of other lands little is said here, save in some few instances, in which they are characteristic of scenery, or form the source of food to large multitudes of the human family.

THE GREEN FIELDS

AND

THEIR GRASSES.

Midst meads whence early sunshine swept bright dews,
Midst fields where Harvest lends her many ears
To the rejoicing lark,—I love to muse
On earth and all its garniture, which cheers
Sad eyes with ever-changing grace. The fields
Are rich in verdure, as the wood in leaves ;
And every emerald blade which sunshine gilds
With genial gold, each feathery tuft that gives
Beauty, and food, and shelter, and each reed
That waves and whistles in the vocal wind,
Hath lessons high, that, followed well, might lead
To the calm pleasures of the peaceful mind ;
For simplest grass, as well as stateliest tree,
Reveals the presence of the Deity.

CALDER CAMPBELL.

It is well when time and opportunity are given us to wander over the wide field of Nature, to look upon clouds, and streams, and green meadows, and flowers. They bring their soothing

B

influence to our spirits. They can remind us of the God who made the world, and who cared not only to create all these beautiful objects, but who has a daily, hourly regard for them, and feeds them with sun and rain from Heaven, and with morn and nightly dews. That sunbeam which falls upon the hills, that gentle wind which sweeps the dry leaf before it, or that dew-drop glistening on the slender blade of the grass, has not only its destined purpose in the economy of Nature, but it has a beauty too with which to delight our intellect. We pause to regard it, and our mental perception is not only quickened but elevated. We learn to love grace, and beauty, and order, wherever we find them; and are acquiring continually ideas such as are unknown to those who look with careless eye on the natural world. There are multitudes to whom these things appeal in vain. Their minds have never yet awakened to a perception of the beauty which lies amid their daily paths; and so the tree may wave ever so gracefully, and the wind whisper ever so musically, and no joy shall reach them, and no sweet memories linger either from sight or sound. Not thus coldly let us look on Nature, which is the open book of God.

If the green meadows, so common to our island, had been made merely to delight our eye, yet would they be a gift of blessing, for their emerald

verdure, variegated by millions of flowers, could not fail to make a pleasant and enlivening impression upon us. And their beauty was designed to bless us, while they have other uses too. The countless blades of grass, thickening there into one green and extensive mass, bending beneath our tread, are sweet food for the thousands of cattle ; and the ox, and sheep, and cow luxuriate among them, and ultimately yield to us the benefits they receive. Grasses constitute an important part of the external covering of most countries, forming large meadows on plains, and on hill sides, giving to the landscape that hue on which the eye can longest gaze untired, fringing the blue streams or crystal rills with their graceful leaves, and the flowers which spring up among them ; or, planted by the hand of man, in fields, ripening gradually from the delicate and tender blade of the spring corn-field, into the rich brown of the full ear, which is to furnish our food. Many grasses grow even in the waters, some in running streams, others only where the waters are still. Some are peculiar to the mountain, others to the woodland, some to the sandy shores, but not one will grow in the sea. Several of our grass-plants are invaluable, as serving by the interlacing of their roots to fix the ever-shifting sands ; and without their aid we should often be overwhelmed by torrents of sands, almost as

fearful as those which appal the traveller over the sandy deserts. In other places they grow on upland and hilly ground, and there restrain the falling of the loose soil; while the wide-spread down, and even the chalky cliff, are made green by their presence. Many of the creeping roots of grasses are very mucilaginous in their properties, and are serviceable in medicine; but besides their individual uses, they, in their mass, influence the health of the neighbourhood, for wherever the verdant covering of the earth is found, it materially affects the atmosphere, especially with regard to its quantity of moisture.

Beautiful as are the grassy fields to us all, yet they have a peculiar charm to the traveller just returning from tropical climes. To him they seem to speak especially of home scenery, for, in those countries in which he has recently beheld the most gorgeous vegetation, the eye could repose on no green meadow. Nothing was there to remind him of the soft rich verdure of his native land, save the rice-fields, where the delicate green leaves waved gently to the wind, and at a distance might lead him to believe that he was looking on some verdant fields of young corn. That grassy turf, which in spring and summer makes our meadows so bright and beautiful, and which adorns the landscape also of other countries in the colder portions of the temperate zone, is

almost entirely absent on those lands on which the sun shines with greatest power. Even in the southern part of Europe, where meadow lands more seldom occur, there begins to be some assimilation in the general appearance of the grassy plants, to the taller species of the east; and reeds, which are with us of very moderate size, rival the grass-trees which form so characteristic a feature of tropical scenery. The species of grass common to warmer lands, are quite different from those which we find in our fields; yet let us find grasses where we will, we always see them growing more or less socially, as botanists term it, that is, growing together in great numbers, and not scattered at distances from each other. Tropical grasses are not only far taller than ours, but they have more elegant downy flowers, and their leaves are broader. The noble family of the bamboo plant rise into trees in the forests, from forty to fifty feet in height; and both in the tropical and subtropical zones, form vast and impenetrable forests. These groves of grasses are most singularly beautiful, with their slender trunks, reclining branches, and tall grassy leaves, reminding the native of northern countries of the willows of his own land. Taller even than our alders and oaks, these tree-like grasses wave more gracefully before the winds than our more substantial trees can do, and give a cheerful and airy aspect to the landscape,

by their light and tremulous motion, and their smoothly-polished stems of a clear yellow colour. Sometimes they are planted around a lawn, and though this lawn is composed of sedge-like plants, much coarser in texture than our green herbage, yet the green mass, enclosed by the tall bending grasses, forms one of the most beautiful objects in nature. An interesting account of these grasses is given by Captain Basil Hall, who describes his sensations, when on awaking early one morning, while travelling in his palankeen towards the wooded regions overhanging the Malabar coast. "I sat up," says this writer, "drew the door gently back, and looking out, found myself in the midst of one of the most curious and magnificent scenes which my eyes had ever beheld. It appeared as if I were travelling among the clustered columns of some enormous and enchanted Gothic cathedral, compared to which, the Minster at York, or the Cathedral at Winchester, would have seemed mere baby-houses: the ground extended on all sides as smooth and flat, and clear of underwood, as if the whole had been paved with grave-stones. From this level surface arose, on every hand, as far as the eye could penetrate into the forest, immense symmetrical clusters of bamboo, varying in diameter, at their base, from six to twenty or thirty feet, and even to twice that width, as I ascertained by actual measure-

ment. For about eight or ten feet from the ground, each of these clusters or columns preserved a form nearly cylindrical; after which they began gradually to swell outwards, each bamboo assuming for itself a graceful curve, and rising to the height, some of sixty, some eighty, and some even of a hundred feet in the air, the extreme end being at times horizontal, or even drooping gently over, like the tips of the feathers in the Prince of Wales's plume. These gorgeous clusters stood at the distance of fifteen or twenty yards from one another, and being totally free from the interruption of brushwood, could be distinguished at a great distance—more than a mile certainly, in every direction, forming, under the influence of an active imagination, naves, transepts, aisles, and choirs, such as none but a Gothic architect ever dared to conceive. Overhead, the interlacing curves of the bamboos constituted as complete a groined roof as that of Winchester or Westminster, on a scale of grandeur far beyond the bold conception of even those wonderful artists who devised that glorious school of architecture which, in the opinion of many people, has raised the dark centuries immediately subsequent to the era of the Crusades, almost to the level of the days of Pericles."

But long ere human architect had planned those glorious structures, these grassy arches were

raised beneath the canopy of Heaven. These were God's first temples —

“So fresh, so pure, the woods, the sky, the air,
It seemed a place where angels might repair,
And tune their harps, beneath those tranquil shades,
To morning songs, or moonlight serenades.”

Scarcely less beautiful than the bamboo tribe are the gigantic grasses of the sugar-cane family, which, however, are not so numerous as the former plants in the warmer zones. Forming impenetrable tufts of sedge-like leaves, from amidst which rise tall slender shafts, bearing large bunches of silvery coloured flowers, they are seen afar off on the landscape, waving so gracefully and airily, that few could look on them without admiration.

In the warm regions where these arborescent grasses appear, the want of meadows is not felt. The cattle on the thousand hills of colder climates are not needed there, and thus the Great Creator of the Universe has spread there no vast plains of green herbage for their use. The Hindoo, who can dine on a lettuce or a dish of rice, would be injured by any great quantity of animal food, and is directed by his instinctive feeling to a vegetable diet. A slight herbage rises up, at all times of the year, after the sudden shower, or the long continued rain, and this is sufficient to supply the horses with food, so that no hay is

needed or made throughout the East. During the rainy season there are, in some tropical countries, extensive tracts of green grasses; but, as in the savannahs of America, they are without all those lovely wild flowers which, like the daisy, the buttercup, and the clover of our meadows, are beautiful to look upon, and which add to the sweetness—

“ When the grass

Sends up its modest odour with the dew,
Like the small tribute of humility.”

The grass plains of South America, as the savannahs on the Orinoco, or the pampas in the southern regions, would not remind us of our meadows, for not only are all the grasses different from ours, but instead of forming a uniform mass of green sward, the grasses grow in larger or smaller patches. On some of these plains, reaching for hundreds of miles in extent, the grass is often as tall as the traveller who is passing through it. In the grass regions of Buenos Ayres, the bowling-green-like pampas are, too, so thickly covered with grass, after the rainy season, that they entirely exclude almost every other plant. So rare is even a shrub or tree, or any thing approaching to it, that flocks are worth less than fuel, and a larger sum would be given for a load of wood than for the horse which carries it.

It is not only the vast and magnificent in Nature

which is calculated to impress our imaginations and our feelings. Every country has beauties peculiar to itself; and although there is not in our land the luxuriance of vegetation which amazes the traveller, yet the soft green verdure of the meadows which lie everywhere around us, are as fitted to gratify us as are the groves of grassy trees. It is pleasant to look upon our meadow lands, as the long grass is swept by the wind into waves as gentle and undulating as those of the summer sea: pleasant to see how the passing cloud brings a transient shadow, a shadow so faint and delicate, so like the shadow of a shade, that one might deem an angel's passing wing had brought it there. Nor is it less delightful, during the calm stillness of the summer's noon, to listen to the sound of the mower's scythe, as the swathe falls before it; or to linger afterwards amid the delicious scents of the hay. Sweet indeed is the odour of the hay-field, rendered the more so by that of the wild briar roses and honeysuckles, which fill the hedges around, while the hay itself is fragrant with the odours of many grasses, but chiefly with that species termed the Scented vernal grass (*Anthoxanthum odoratum*). This plant is very abundant in our meadows and woods, and grows often on the mountain pasture at a great height. It is about a foot high, with short leaves, and a compact panicle of flowers, which become of so yellowish a hue as it ripens, as to have sug-



currant berries, and these probably secrete the odour of the grass, which is of the nature of benzoic acid. All the species of this grass are fragrant, but this is the only one peculiar to British meadows; and the meadow-hay made from ray grass, or other sown grasses, in which this vernal species is wanting, has not the sweetness which is yielded so fully by this. The vernal grass is scentless while growing, but like that sweet plant of the woodlands, the Sweet woodruff, its odour, when dried, is powerful. But to all accustomed to country rambles we need say nothing of the scents of the hay-field, which rival those of the hop-garden, and the field of flowering beans, and are among the most delicious perfumes of our native land.

The grass meadows were made ultimately for the service of man, since all living creatures are subject to his will, and many may be appropriated by him to his service. But those wide green lands, so full of grass and flowers, support also a whole world of inferior creatures, which derive thence their food and enjoyment. It is not alone the horse and cow, and the tribes of lazy sheep, and the herds of graceful deer, that have their home among the green herbage. Over its grassy banks the lizard glides into the sunshine, the snake in the grass comes forth to bask in the noonday beam, and like all other of our British reptiles, save the viper, is perfectly harmless. The bright-eyed

toad crawls among the grasses; and the merry frog emerges from the pool into the moist pasture near it. Snails and slugs leave a track over the meadow, glittering in rainbow colours, and myriads of spiders weave their tapestry from stem to stem. The birds which gladden our woodland walk, which in morn and evening seem singing with all Nature a hymn of praise, are many of them fed by the seeds of the grass, or on the young shoots and leaves of the mead. Insects of all degrees glide there, or hover around, and with faint hum or chirrup join the full-hearted song which may be heard by him who listens. Butterflies, like living flowers,—bees, with their note of summer work, are conspicuous enough; but myriads, which can be seen but by the eye assisted by the microscope, are there too, and are as happy and sprightly as they. Every plant, not of the meadow alone, but of the wood or garden, seems to have its tribes of insects, wholly dependent upon it. The common nettle supports at least thirty distinct species; and there are many insects to which the peculiar grasses form their appropriate meal. The larger animals which feed on the meadow, eat either the green blades or the plants which grow up among them, but not so the insect race. These in turn adopt for their food each part of a plant, some eating one portion, some another. Thus one delights in the root, another in the stem, a third in the blossom, another pre-

fers the leaf or pith, while the aphides are nourished by the sap of the plants. The bright grasshopper has a name indicative of the haunts which it loves, and the green blades which it crops for its food; and as we listen to its delicate wild chirp, we wonder not that the Greek poet praised it so highly, and that the ancients regarded it as the happiest as well as the most innocent of living creatures. Like the grass itself in greenness, it will always be a favourite insect from its sprightliness and grace, and will call us to pause in our summer walks, over the meadow, when

“A whispering blade
Of grass, a wailful gnat, a bee bustling
Down in the blue-bells, or a wren light rustling
Among sere leaves and twigs, may all be heard.”

But all Nature is under the curse pronounced on earth when man fell, and the meadow is sometimes subjected to a blight, caused by the ravages of the insect race. Like the locusts of the East, these tribes sometimes come in unusual numbers, cutting up the grass and every green thing; and were they permitted season after season to increase in this manner, the green meadow lands would soon cease to be characteristic of the northern regions. The grub of the common cockchafer is said, by Kirby and Spence, to remain in a larva state for four years, and in this condition it will sometimes destroy whole acres of grass, undermining the richest meadows, and so loosening the turf that it

will roll up as if cut with a turving-spade. "In the year 1785," say these writers, "many provinces of France were so ravaged by these insects, that a premium was offered by the government for the best mode of destroying them. They do not confine themselves to grass, but eat also the roots of corn, and it is to feast, more particularly, upon this grub, that rooks follow the plough." These grubs did so much injury, about seventy years ago, to a poor farmer near Norwich, that the court of the city, out of compassion, allowed him 25*l.*, and the man and his servant declared, that they had gathered eighty bushels of the beetle. Nor are these the only insects which deface our grassy lands by their ravages. The larva of the tree-chafer is extremely destructive to our moist pastures, and rooting under the herbage, it so loosens the soil, that the grass withers and dies. Other insects have proved so great a pest in the meadows of other countries, that the grass lands of Sweden have become quite white and dry, as if a fire had passed over them; and in 1757 the pastures belonging to some sheep farmers, about Tweeddale, were so dreadfully infested by a caterpillar, that spots of a mile square were entirely covered by them, and the grass was there devoured down to the root.

The name of grass is a very old one, and so general, that Burnett remarks it exists, with a slight modification, in all the Teutonic dialects.

Thus in Anglo Saxon we find Graes, or Gaers ; in German, Gras ; in Danish, Gräs ; in Swedish, Gras ; in Icelandic, Gras.

Even those unacquainted with botany, are perfectly familiar with the general appearance of the grasses. Their stalks, or culms, as the botanist calls them, are round, hollow, and jointed; and the green flowers of most of the species, as well as the long slender leaves, are sufficiently similar to make them quite characteristic of the order. Some of these panicles of flowers are, in summer time, exceedingly beautiful, varying from a bright or delicate green hue, to every shade of purple, and bending most gracefully to every zephyr which plays about them. Their slender form enabling them to bow before the breeze, prevents their being broken by the rougher winds; and they are farther supported in the upright position by a thin cuticle of flint, which is found in all the grasses. The cereal grasses, as wheat, rye, maize, and barley, have for ages constituted the staple food of civilized man; and the seeds of many of our smaller grasses might be cultivated for the same purposes, did not their minuteness render them less suitable. In times of scarcity, however, and in countries partly civilized, the seeds of such grasses as are usually employed only as fodder, are made into bread. The wild oat of our fields is sometimes ground for food; and the

seeds of the large Sea Lyme grass, the plant so conspicuous on our sandy shores, are used by the Icelanders for their bread. So, too, that thick succulent Floating meadow grass (*Poa fluitans*), so abundant in our ditches and stagnant waters, often growing there to the height of three feet, has seeds, which, in some countries, are very serviceable as food. These seeds constitute the common manna of commerce; and in Holland, as well as in some parts of Germany and Poland, they are gathered in great quantities in order to be made into bread, and other articles of diet. De Theis says—"I have seen the Polanders, in the suite of King Stanislaus, gather these manna seeds on the banks of the Meurtha." Meyen, too, remarks of this grass, which grows wild in Germany, on the margin of standing waters, as well as on very wet meadows, that "round Berlin, where the plant grows singly, no one thinks of the well-tasted seeds which it bears in its spike; but farther east, in East Prussia, Masuria, and the Lower Vistula, it grows in such quantities that the seeds are gathered with great profit, without the plants having been previously sown." Several fine kinds of groat for gruels are also made of the seeds of this plant. It produces a large number of seeds, and they are not only eaten by geese and ducks, but are eagerly sought by the fish, especially the trout; while to how many

of the birds which delight us with their music, they serve as a refreshment, we know not. The



FLOATING MEADOW GRASS.

long narrow leaves, too, which float on the surface of the waters, form a sweet herbage for horses and cattle.

We have many other species of *Poa* among our wild grasses, and one of the most common plants in the whole world, is the Annual meadow grass (*Poa annua*), a diminutive species, found in every meadow of the temperate zone. Nor is it to be met with there only, for on every waste spot where a wild weed may spring, on the bank by the road side, among the mosses and stonecrops of the old wall, coming up in little clumps between the crevices of the city pavement, where the foot

of the passenger is not so frequent as to eradicate all vegetation, we tread on it daily, in summer

and winter. Be the season inclement as it may, nor wind, nor chilling rains, nor sleet, nor frost,



ANNUAL MEADOW GRASS.

shall prevent this plant from ripening its seeds, and casting them out, even before the time for weeding commences. This grass is more useful as short grass on the meadow lands where cattle

may feed, than fitted for making into hay. It is one of the sweetest grasses, and it is thought that during more than eight months of the year, it ripens and deposits seed. Much do we, who delight in the verdant covering of the earth, in the green lane, or wide-spreading meadow, owe to this little plant. It has so many fibres to its root, that these serve, not alone to draw from the soil the requisite nutriment, but they fix it firmly there, and so the frost, which loosens so many plants in winter, leaves it unharmed. "It becomes," says Knapp, "a support to its needy neighbours in winter, and by its plentiful and sheltering foliage, preserves a certain degree of humidity during the exhalations of summer." Though not a perennial grass, its seeds being shed at all seasons of the year, it may be seen at all times in various stages of growth, and we may say of it as Wordsworth said of the daisy, its "home is everywhere." Knapp has observed of it, that were its seed supplied with wings, or better calculated to be carried through the air than those of other grasses, we should not be so surprised at its universality; but when we see how it insinuates itself between the scarcely perceptible crevices of walls, and even on the very summit of high buildings, between flagged pavements, in fissures of rocks, and similar places, its growth is truly wonderful.

There are about fourteen British species of the meadow grass, comprising several valuable pasture



ROUGHISH MEADOW GRASS.

plants, and some which are very useful for hay. The species called the Roughish meadow grass (*Poa trivialis*), as well as that termed the Smooth

stalked meadow grass (*Poa pratensis*), are very common in meadows and pastures, and the former is considered by Curtis to be one of our best grasses, especially for moist soils, and sheltered situations. It is a very useful plant for grass-plats in towns, where the smoke and confined air are so unfavourable to vegetation, that no grass, save this and the Annual meadow grass, will contribute to the little patch of verdure on which the eye of the dweller in cities is glad to repose. The smooth stalked species too, is, in early spring, one of our greenest of grasses, and to its abundance we owe much of the beauty of the green earth in the early year. It is a valuable grass for the pasture of moist meadows.

These meadow grasses are so similar in appearance, and so difficult of description, that we must leave unnoticed the greater number. Some grow on very elevated spots, making the lofty mountains of England and Wales of emerald hue; and some grow in the good green woods of our island. Some are found on the sea-coast; and the bulbous meadow grass, frequent on the sandy shores of the east and south of England, may be known from the others by the bulbous roots, which are blown about by the rough winds which prevail in the neighbourhood of the ocean.

Besides the tall floating meadow grass of our pools, there is a very conspicuous grass, indeed



REED MEADOW GRASS.

one of the tallest of our British grasses, which is sometimes very plentiful at the sides of rivers, ponds, or ditches. This is the Reed meadow

grass (*Poa aquatica*), and it might almost, by its height, remind us of the grasses of warmer latitudes, for it sometimes, in favourable situations, is six feet high. It is a native of most parts of Europe, and abounds in the fens of Cambridge-shire and Lincolnshire, where it is often cut down three times in the year, forming not only a rich pasturage all the summer, but constituting the chief winter fodder for animals. It grows not only on the moist lands watered by rivers, but in the water itself, and may be seen overtopping the pointed leaved arrow-head, and the broad foliage and rose coloured flowers of the plantain, and the prickly balls which cluster on the burr-reed, and waving about, like a plume far above the surface of the stream. Owing to the rapid growth of this, as indeed of most water plants, it soon fills up the standing pools, and even where the water of the river runs but slowly, it gains ground very quickly, sending out its powerful creeping root, and taking firm hold of the soil. On this account it sometimes proves a formidable impediment to the drainage of moist districts. Curtis says of it, that the waters in the Isle of Ely become so encroached upon by this and other aquatic plants, that they are obliged to be cleansed by the use of an instrument called a bear, which, being drawn up and down the streams, tears up the water plants by their roots.

One species of this grass (*Poa nemoralis*), grows among the lovely flowers of the woodlands, and



WOOD MELIC GRASS.

several of our native grasses prefer the shadow of these recesses to the sunshine of the open lands. Such is the Wood melic grass (*Melica uniflora*), a plant which all who are accustomed to roam in

woods and hedges, will recognise by the engraving. In June and July, when this pretty grass is



MILLET GRASS.

in bloom, its stem is so light that the green flower droops slightly downwards. A smaller species is

also found, more rarely, in the woods of the mountainous countries at the north of England and Scotland. A very tall kind of Brome grass, with broad leaves and a stem from four to six feet high, makes a conspicuous figure also in our woods, and one of the grasses most common there is the elegant Millet grass (*Milium effusum*), which is usually about three or four feet high.

Among all the numerous grasses that deck our green earth, one alone possesses poisonous properties. This is the Bearded darnel (*Lolium temulentum*), which is not by any means a common grass, though plentiful in some English corn-fields. It is very similar in its appearance to the wheat, until both plants are in ear; and our fore-fathers believed



BEARDED DARNEL.

that in wet summers the wheat changes into darnel, a superstition yet entertained by some uninstructed people. Nor was this the only grass which was supposed occasionally to turn into another kind; for so general was once the belief in these changes, that Linnæus found it necessary to write a dissertation to refute the opinion. The ancient, as well as modern poets, have attributed poisonous properties to it, for this grass is thought to be the *infelix lolium* of Virgil, which he greatly condemns. Shakspeare alludes to it among noxious plants,—

“The fallow leas,
The darnel, hemlock, and rank fumitory
Doth root upon, while that the coulter rusts
That should deracinate such savagery.
The even mead, that erst brought sweetly forth
The freckled cowslip, burnet, and green clover,
Wanting the scythe, all uncorrupted rank.”

Many writers believe this to be the plant referred to in the Scripture parable of the Sower, as the tares, which the enemy sowed in the field, while men slept. It is well known, that even in the present day, the peasants of Palestine and Syria are not accustomed to cleanse away the weeds from their corn, but are said by travellers to leave even that plant which the Arabs call Siwan, which intoxicates those who take it with their food. It is in conformity with this view that

the French translate the word tares in the Scripture narrative, into *ivraie*, from *ivre*, drink. This word has been corrupted in our land into ray grass, which is one of the common names of the darnel. Though with us it seldom prevails to any great extent, yet in some countries it overtops the wheat and chokes its growth, and it seems very generally thought to cause head-ache, vertigo, and difficulty of speech, if it becomes mingled with the bread-flour. Professor Lindley, however, considers that an exaggerated view has been taken of its noxious properties, and says that they disappear in bread or beer made from it; and that, in times of scarcity, many have subsisted on food made of the darnel.

Some of the old Greek poets thought that the darnel affected persons, who ate of it, with blindness, which lasted some hours; and "thus," says Professor Burnett, "in Plautus, when Palaestro inquired what Sceledrus meant by his living on darnel, he receives for answer, 'Because you are purblind.'" This writer adds that a few years ago two acres of ground in Battersea Fields were sown with this grain,—“though to what good purpose it could be applied is unknown, for although darnel meal was once recommended as a sedative cataplasm, it has long been disused, and, according to Withering, horses, geese, and other animals are killed by darnel.” The Chinese have

long had laws forbidding the admixture of this grain with fermented liquors.

A much more common species than the Bearded darnel, is the perennial kind (*Lolium perenne*), which is a very valuable grass for the agriculturist, and frequents our waysides and pastures. It much resembles the bearded darnel, but is quite free from any noxious properties.

Many sorts of grasses are gathered together on every pasture land, and the student of this tribe of plants could draw out from a hay-stack several of the commonest kinds. Curtis recommends six species, as preferable to any other, for laying down meadows and pastures. These are, the sweet vernal grass, the smooth stalked meadow grass, and the common meadow grass, which plants have been mentioned on a preceding page; and the meadow fox-tail grass, the crested dog's tail grass, and the meadow fescue grass, all which will be further noticed. It is probable, however, that certain kinds of grasses are indigenous to every soil, and that in course of time they predominate over any other which may be introduced.

The genus of Fescue grasses (*Festuca*) received its name, according to Theis, from the Celtic word *fest*, which signifies food or pasturage, and, as its name indicates, it includes several valuable grasses.



PERENNIAL DARNEL.

Every one has seen, on dry and high pasture land that delicate tufted grass called the Sheep's fescue grass (*Festuca ovina*), with its short and often curved leaves, and its stem usually about six or eight inches in height. It affords valuable pasture for sheep, and is said to produce excellent mutton. It is a good grass for lawns,



SHEEP'S FESCUE GRASS.

for it forms so thick a turf that very few other plants will intrude into its domain. The greater portion of the vegetation of the Hebrides is

composed of this and another species of the same genus, the Hard fescue grass (*Festuca duriuscula*), which is a taller grass, common on pastures and waste ground,



HARD FESCUE GRASS.



MEADOW FESCUE GRASS.

and one of which hares are remarkably fond.

D

The most common species in our land is the Meadow fescue grass (*Festuca pratensis*), which is in much use among agriculturists for pasture land. It is generally about one or two feet high.



MEADOW FOX-TAIL.

SLENDER FOX-TAIL GRASS.

The Meadow fox-tail (*Alopecurus pratensis*) is so common a meadow grass, that all who notice plants must have seen it. It is of a yellowish green colour, and crowded with silvery hairs, and

is one of the most serviceable of meadow grasses, both from its abundance and the early season at which it is fitted for the scythe. The purplish coloured flower of the Slender fox-tail grass (*Alopecurus agrestis*), also adorns our fields and way-sides, but it is not a valuable addition to the pasture, and when growing among wheat is a most troublesome weed to the farmers. It is sometimes called black bent, from the dark hue of its spike, while their slender form suggested the old English name of mouse-tail grass, by which it is commonly known in some counties. Some of the species grow in wet salt marshes, and in ponds and ditches. The Floating fox-tail (*Alopecurus geniculatus*), the ascending stem of which is bent at the joints, is common in pools and in wet and marshy places, and sometimes grows on dry ground. A remarkable instance of the manner in which the Great Creator has enabled plants to adapt themselves to the soil, or other circumstances, is seen in this plant. The grass has a fibrous root when growing in the neighbourhood of streams or rivers, because a regular quantity of water is supplied to it from the soil, always kept moist by the near presence of waters. But sometimes the plant grows and thrives on lands far away from rivers, and with nought but the rain, and morn and evening dews, to keep up the portion of water which it requires; or it grows on lands some-

times moist and sometimes dry. In these positions the root of the grass becomes of a bulbous form, and this being adapted to contain within itself a supply of moisture, it lives and flourishes in



FLOATING FOX-TAIL.

the midst of drought. Some other grasses are similarly altered by circumstances, and he who looks on Nature with the loving eye which enables him to perceive things not seen by the

thoughtless, finds on its pages a frequent lesson of Almighty care. Blessed are the pure in heart, for they shall see God, not in the future world only, but in the world on which they daily walk.



ROUGH COCK'S-FOOT GRASS.

The Rough cock's-foot grass (*Dactylis glomerata*), must be named as one of the commonest of

all our native grasses, as it grows in every meadow and way-side. It is a coarse plant, but useful on pastures and light soils, because of its early and rapid growth, and its abundant herbage; and though not, in its fresh state, one of the plants preferred by cattle, yet it makes good hay.

Our engraving represents another valuable and very common grass of dry pastures. This is the Crested dog's tail (*Cynosurus cristatus*), a greenish coloured plant, little varied by any brighter tint. There are several species, too, of the Cat's-tail grass. One only is very common, but that one is to be found in every meadow. It is the Common cat's-tail or Timothy grass (*Phleum pratense*). This latter name it received from Timothy Hanson, who introduced it from New York and Carolina, about the year 1780. It varies much in soil and situation, and its root becomes bulbous on dry grounds.

Besides the adaptation of various individual grasses to the soils on which they grow, the whole of this family of plants exhibits various instances of creative skill. Designed as they are for all soils, and for so large a portion of earth's covering, they are fitted for their purposes, not merely by the great abundance of their seeds, but by the numerous subterranean roots by which many are propagated, and by the viviparous

nature of others, which causes them to send out young shoots instead of bearing seeds. The more the green blades are cropped the more abundantly and vigorously do they spring up anew; and the scorching sun which



CRESTED DOG'S-TAIL.

COMMON CAT'S-TAIL, OR
TIMOTHY GRASS.

deprives so many plants of their nutriment, only fits these for the provident purposes of man. On

alpine lands, as well as on the sandy shores which form the boundary to the waves of the ocean; on exposed downs, in which the heat is hardly sufficient for the ripening of their seeds, they often grow in large masses, yet produce no flowers. Yet this is not mere accident. On such places high winds prevail, which would carry away the seeds far from the spots on which they grow, and plant them in regions where their services were less needed. On these places, therefore, the viviparous species prevail chiefly, and a strong mat-work is formed beneath the soil by their fibres, entangling and crossing each other, a mat-work without whose aid the loose sands on some parts of our coast would not keep their position, but would be borne inland by rough winds, desolating our woods, and green fields, and blooming gardens.

Those who are used to our sandy shores know how often some little patch of grass seems like a miniature oasis among them, sheltering here and there some little sand-flowers, or some green weed, which would not spring but for their aid. On such places as have firmer sands, we see little of this, but on parts of our coast where wide plains of shifting sands exist, large tracts of grass may be seen even at a distance. Although the Sea wheat, the Sea barley, Sea cat's-tail grass, the creeping Sea meadow grass, and some other less

frequent grasses, are of service in binding the shores, yet by far the most valuable of the plants on the coasts of our island are the Lyme grass and the Sea reed. The Lyme grass (*Elymus arenarius*), grows in abundance on some parts of our shores, and is especially useful by its long roots in fixing sands. It is not always common, however, on these places, but on many portions of our sandy shores is quite wanting. On spots where it grows abundantly, it may be known from any other species, by the peculiar blueness of the inner surface of its leaves, so that it colours the landscape with a light grey tint. It very rarely flowers, but its stems and foliage are four or five feet in height; the leaves are broad and flat, and slightly notched at the edges, and they have a pungent flavour. Valuable as this plant is to our island shores, it is of still more importance to those of Holland, for it is by means of this and the Sea reed, that the loose sandy soil of considerable extent has been preserved from the encroachments of the waves. The seeds are said to be made into bread in Iceland.

The Common sea reed, marum, or matweed (*Ammophila arundinacea*) is more frequent and nearly as useful a plant as the lyme grass. It is not quite so high, and though of a sea green tint, is not so blue in its hue as that plant. Like the lyme grass, however, its root creeps a great way

into the sand, and it has been largely planted in Norfolk, and also in Holland, for the preservation



LYME GRASS.



COMMON SEA REED.

of the coast. It is never found on inland soils, nor will it grow on firm sandy ones. Sometimes,

after the course of years, sand-banks originally loose, and subject to be blown about by every stormy wind, become firm by means of the matted roots of the sea-side grasses, and then the sea reed gradually disappears. It has performed its service in the economy of Nature, a firm shore is given to that part of ocean's borders where all was once shifting, and the plant is found no longer there. One remarkable characteristic of the matweed preserves it wholly as a maritime plant. In all other species of the genus to which it belongs, little tufts of wool are placed at the base of the florets. These serve as a wing on which the seeds are borne far away. But this particular species has no such provision, for the little woolly portion is so small as to be useless as a wing, and thus it falls and vegetates close by the parent plant, and summer after summer its roots are spreading wider and wider, till a firm soil is formed where once the drift was scattered. The long narrow rigid foliage of this plant is made by the poor people in the neighbourhood into a coarse matting.

But if the sea has its grassy border, so too, have the margins of rivers, lakes, and standing waters, and among their foliage spring up some of the most beautiful of our wild flowers; and willow herbs, and the flowering rush, and other bright blossoms, quiver in beauty among the tall green

foliage which surround the waters, while graceful water-lilies lie on their calm surfaces. Gliding softly through them, the silver current moves onward, refreshing them all as it goes, and bringing gladness on its way, like the daily, hourly kindnesses from some gentle heart, which fall noiselessly on all within its influence, yet awaken smiles and pleasant thoughts in all around. Down in the very waters too, there are flowers and grasses, for though the sea has neither grass nor blossoms within its bosom, the rivers and streams make there their greenest and brightest of garlands; and grasses float among the forget-me-not, and yellow iris, and snowy crowfoots, and large purple water violets glisten among them. Of some of our floating grasses mention has been made already, but there is one grass which fringes our rivers and streams, which is most abundant, and most conspicuous, waving its light clusters to the summer wind, and forming a miniature grove round the water. This is the tallest of our native grasses, the Common reed (*Arundo phragmites*).

All who have lingered in mid summer by the country streams, listening to their music as the waters rustled among the sedges, or fell softly over the stones, have observed a tall purplish brown grass, like a waving feather, growing in thick clusters, about the height of four, five, or six feet. One might see it long before reaching

the spot where it grew, and bending down its thousands of plumes, somewhat of its grace and



COMMON REED.

beauty could be discovered far away. Patches of immense extent are formed of this plant in

the eastern parts of England, and are called there Reed ronds. The French call the grass *Roseau de marais*, and the Italians, *Canna palustre*; and De Theis says, that *Arundo* is derived from *arn*, the Celtic word for water, while *phragmites* is from the Greek word signifying separation. Great use is made of the stems in thatching cottages and barns, and also in forming embankments or sea-dykes. They are used, too, for cottage ceilings, for screens, and various other purposes; its panicles afford a good green dye, and its roots are useful in complaints of the liver. In Italy a larger species of the reed is extensively cultivated for fence wood, and over its firm stems the vine creeps gracefully, hanging down its festoons of foliage and clusters of purple grapes. Nor is the graceful plant, which forms a delicate grove around our waters, to be regarded merely as an elegant adornment of their margins. In many low lands of Huntingdonshire, Cambridgeshire, and Lincolnshire, this reed constitutes the crop of the soil, and is, in its season, carefully harvested, and even exported into the adjoining counties for the various uses to which its culms are applied. An immense number of aquatic birds find a home among these reeds; and sheltered there may sometimes be found the rare bearded titmouse, with many of our more common birds. So much injury is done by birds to this valuable crop, that

the farmers of these reedy districts are compelled, during the autumn, to despatch boats with men carrying fire-arms to scare them away. Knapp, who mentions this circumstance, observes, that as "evening advances, one sees crowds of starlings approaching from every quarter, in numbers that exceed belief, to pass the night upon the reeds; upon which, after various arrangements, they alight in myriads, bearing down by their weight this flexible plant into the water, and one sees large patches lodged, and beaten flat, and spoiled; and though the guns of the boatmen sweep them away by hundreds, the survivors are so drowsy, that they remain stationary, or rising, settle again immediately over the bodies of their slaughtered companions, returning, evening after evening, in numbers not apparently diminished, and in oblivion of the carnage of the preceding night." The farmers of these neighbourhoods assured this writer, that they commonly destroyed some bushels of these birds in a night. Hid among the reeds, too, the fox lurks for his prey, and darting out from his hiding-place, just when the hapless starlings are roosting, he tramples down the waving grass before him and seizes his victims. The old name of windle-straw, which this grass had, is still retained in some districts, and was given because it bends to the winds.

In the cooler regions of the tropics, rushes

crowd around the standing waters just as our forests of reed do in this land. Thus the shores of the Lake Titicaca are described by Meyen, as enclosed by a thick forest of a beautiful rush, just as the borders of the Prussian lakes are by the same reed which adorns ours. The people of that country, he adds, would live in great wretchedness were it not for these plants, for it lies far above the limit of trees, and only a few bushes grow in its neighbourhood. A few sticks, an oar to put the balsas or boat, woven of rushes, in motion on the lake, or a pole for a mast, on which to hoist a sail, also woven of rushes, are the riches of the poor people of that country, which is quite without wood.

Besides the uses of our large masses of reeds to aquatic birds, some sweet birds of the woodlands are sometimes tempted to linger there for a while, to make "gladness musical," and pour out a song of joy; and around the stems gather thousands of fresh-water shell-fish. There, the inhabitants of the delicate mud and coil shells, find their repast and shelter; and there, too, are other shells, so fragile that it would seem that a breath of wind must break them; yet are they shielded from harm by the hand that framed them, as effectually as is the hard spiny shell which ocean dashes on the rock. Millions of water-insects revel among the reeds, and float on the stream; or they rise

on wings delicate as air, and bright in tint as the rainbow, to hover about them; and from among them the blithe frog hops merrily on the green sward, as if his whole life were one of joy; and the notes of the water-fowl, heard among the reeds, seem too to tell that theirs is a world of happiness.

The reed-enclosed water may lie among the marshy or boggy grounds, and then the bright yellow spearwort, or the delicately-fringed bog-bean, or the glistening sun-dew, may be found mingling with the grasses of the bordering lands. A marsh differs from a bog, only by its greater firmness, and by containing a less quantity of water. The marsh would sink beneath our tread, and would not spring again, as the bog will do. Many plants, however, belong to either spot. Some grasses, like the Reed canary grass (*Phalaris arundinacea*), grow only on very moist places. This is common at the sides of rivers, and easily known by its long variegated leaves, from which it has the common name of riband grass. Its roots are most valuable in securing the river banks. It is often planted in gardens, and Knapp says of it, that it is a favourite plant of the Welsh peasantry, and that it is used to decorate the graves of those whom they have once loved. On the lowly sod this grass waves its plumes and brightly variegated foliage, and mingles with the silvery

flowers of the wild cudweed, which is commonly



REED CANARY GRASS.

known by the name of the pearly everlasting,

and which is a plant of some of our moist meadows.



TURFY HAIR GRASS.

The Purple melic grass is also found on wet bogs, and so are the Meadow barley and Meadow

fescue grass, and the Turfy hair grass (*Aira cæspitosa*) is common among the bushes and thick green mosses which grow on these spots. It often trails over the ground to the length of several feet, the panicle presenting a beautiful purple silky appearance. It is one of the coarsest and roughest grasses of moist meadows, and cattle will not touch it, unless compelled to do so by hunger. It is very apt to grow in tufts, and to occasion those irregularities in the surface of the meadows which interrupt the progress of the scythe, hence it is commonly called hassocks in country places, and is also named rough-caps, and bull's-faces, in some counties.

Another of the hair grasses, called the Whorl grass (*Aira aquatica*), grows not only on the moist lands at the margin of pools, but also in the water, running there to a considerable distance, and it may be known by the bluish tint of its panicles, and the sweet taste of the flowers. This is said to be the grass which chiefly contributes to the excellence both of the Cambridge butter and the Cottenham cheese. It is much relished by cattle, and the water-fowl eat its young shoots and seeds.

Another species, which is abundant on our heaths and hilly places, the Waved hair grass (*Aira flexuosa*), as well as the turfy species, is among the few grasses which grow within the

arctic circle. The green turf is not quite wanting there, but here and there the traveller, after



WHORL GRASS.

wandering over dreary tracts, covered only with the reindeer and other lichens, is reminded of

temperate climes, by the patch of verdure, and he welcomes with delight some common English



WAVED HAIR GRASS.

grasses. These two familiar species are often accompanied by the Millet grass of our woods,

which was figured on a preceding page, and which enlivens many a hill-side in those northern regions.

One of the commonest grasses of our heaths is the Mat grass (*Nardus stricta*), which grows there in short tufts. It is so hard and rigid that cattle will not touch it. In drying for the herbarium this plant often becomes of a beautiful verdigris green.

Perhaps the time when the sight of the green meadows most delights us is in early spring. How beautiful are they as the sunlight comes down upon their gleaming blades, and the blue heavens are hanging over them. Every day the grass seems to become taller, and thicker, and greener. Thousands of long slender leaves are blending with the foliage of various forms which precede the spring and summer flowers, and

“Grow like the summer grass, fastest by night,
Unseen, yet crescive in its beauty.”

This rapidity of growth adds much to the interest with which we look on Nature at this season. The scene of to-day is even richer than that of yesterday. It may be that a storm, accompanied by pouring rains, sweeps over field and valley, and its torrents might seem destined to dash down the tender grass to earth, and to strip the bending twigs of all their wealth of leaves.



MAT GRASS.

Yet that very storm shall but prepare the way for their quicker growth; for the electrical state of the atmosphere which follows it, is, of all conditions, most favourable to the rapid increase of vegetation. And this same state of electricity, which thus invigorates the plants, has a benefi-

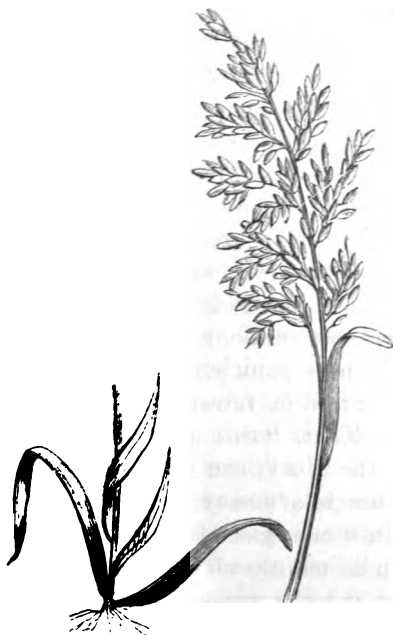
cial influence too on man, and may add to that buoyancy of spirits which we experience in spring-time, and which makes us feel as if existence itself were a blessing. At such a moment, if God has mercifully given to us to rise for awhile from the cares and sorrows incident to mortality, and we may wander forth to look upon the green fields which we love, all Nature seems singing its glorious anthem, and we are glad to join in the general chorus.

At this time the loud winds are rushing in wild melody, but they bring no ill-tidings to the pearly daisies, which cover the field with their blooms. And now the gleesome children run in among them, and setting the tiny foot on a cluster of nine daisies, shout out gladly that spring is come. A little later and we find the grass taller still, and among its leaves the buttercups are so bright and thickly scattered, that the daisies are almost hidden by them ; and yellow bird's-foot trefoil, and clover of sweetest scent, brighten the green field, and the hawthorn and the wild briar rose lend the charm of their added perfume. Who that has, in early days, wandered in the meadows when spring was passing into summer, cannot remember with pleasure,

“ Of the lying in the grass,
While the clouds did overpass ;
Only they, so lightly driven,
Seeming between earth and heaven.”

And now the period is arriving when the lover of green fields can best examine the forms of the individual grasses. They are now putting forth their plume-like panicles; for although some, like that which gives its odour to the hayfield, the sweet-scented vernal grass, or like that equally common plant, the meadow fox-tail, are in flower during May, yet the greater number are not in bloom until June, July, and August.

One of the most ornamental of all our meadow grasses, and one of the most common too, is the soft grass whose panicle of blooms has a downy surface like that of velvet. This is the Meadow soft grass (*Holcus lanatus*), called in our northern counties, the Yorkshire whites, and Yorkshire fog. It has soft downy leaves, and a spike of flowers, in which pale pink and delicate green hues seem to mingle one with another. Its root is fibrous, and the grass grows on all soils, from the richest to the poorest, though flourishing most on light peaty lands. It is not a favourite plant with cattle, indeed they will quite neglect it if they can find any other herbage, and this grass may often be seen on pasture lands, quite untouched, and with full-grown perfect leaves, while others are cropped down to the roots. The nutritive matter of the plant consists of mucilage and sugar, but the properties of grasses most relished by cattle, are either sub-acid or saline.



MEADOW SOFT GRASS.

It has been suggested that this plant might be made more palatable to animals by sprinkling salt over it.

The Creeping soft grass (*Holcus mollis*) is equally abundant in pastures and hedges, and may be distinguished by its creeping roots, which send out shoots, sometimes five feet long, and thus

render it very difficult of extirpation, and as the plant is disliked by cattle, on account of its tasteless, dry, and soft herbage, it is often an unwelcome plant on pasture lands. The root shoots have, however, a quantity of nutritive matter, which has the flavour of newly made meal. Pigs tear up and devour the roots with great eagerness.

A very handsome grass, which our engraving will enable the reader to identify as a very frequent one in hedges and pastures, is the Oat-like grass (*Arrhenatherum avenaceum*). It is a very large and conspicuous plant, and has a long loose panicle of greenish brown hue. "I have seen," says Miss Kent, "this grass six feet high, with leaves two feet long, and more than an inch wide, with its panicle of flowers gently drooping to one side, at least one foot six inches in length, and so finely polished, that but for their green colour, we might think it was composed of silver oats. Yet it is not green, neither is it white, nor gold colour, nor purple, but it is a union of all these; it is the offspring of silver and gold, of the amethyst and the emerald." It is indeed very variable, but in the full pride of its beauty this grass is truly magnificent. This beautiful grass is sure to grow almost in every pasture, and from the quantity of herbage which it affords in early spring, it would be a truly valuable addition to the land, were it not that a large proportion of a bitter



OAT-LIKE GRASS.

property exists in it, which renders it less pleasant to the animals which feed there. It is, however, eaten with the other pasture plants by sheep, cattle, and horses, and it is well known that many grasses not relished by animals, are yet perfectly wholesome for them.

A number of coarse rough looking grasses, some of them somewhat similar in form to the oat, are common, not only on meadow lands, but are very handsome ornaments to woods and hedges, during June and July. These are the brome



HAIRY BROME GRASS.

grasses. The Hairy brome grass (*Bromus asper*), represented by our engraving, is very common in moist woods and hedges, and rivals in size the reed which grows around our pools, these two

being the tallest of all our British grasses. It is four, five, or even six feet high, and it may be known from the other species by the hairiness of its stalks.



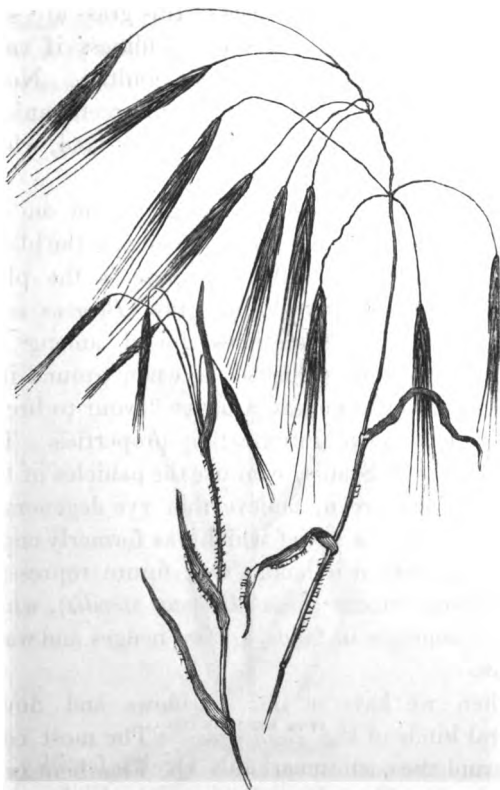
SOFT BROME GRASS.

The most common plant of this genus is, however, the Soft brome grass (*Bromus mollis*), which is indeed to be found everywhere. It is about one or two feet high, and instead of hanging down when in flower, as the hairy species does, the

panicle is erect. The seeds of this grass are said, by some writers, to produce giddiness if eaten with flour, and to be fatal to poultry. Not a wayside on which grasses grow, no green bank, or hedge or field, could be found in our land, where this grass does not present itself.

Some other of the species are found on our green lands, and some spring up among the blades of our corn-fields. Among these is the plant called the Smooth rye-brome grass (*Bromus secalinus*), which is sometimes found among rye and wheat crops. The seeds, when ground into flour, are said to impart a bitter flavour to bread, and to have some intoxicating properties. The inhabitants of Scania, who use the panicles of this plant to dry green, believe that rye degenerates into this grass; a belief which was formerly entertained in our own land. Our figure represents the Barren brome grass (*Bromus sterilis*), which is very common in fields, and on hedges and waste places.

Then we have in our meadows and downs several kinds of the Bent grass. The most common and the earliest species is the Fine bent grass (*Agrostis vulgaris*), which is to be found on every meadow, and on banks, and all green spots of our isle. Its panicle of flowers is of a purplish colour. It is about a foot, or a foot and a half in height, and has long creeping roots. The Marsh bent



BARREN BROME GRASS.

grass (*Agrostis alba*), is a very useful species, and is also very abundant on pastures, by roadsides, and in other places. This is the celebrated

F



FINE BENT GRASS.

Fiorin grass, so remarkable for its fertility, and which Sir Humphrey Davy ascertained to possess so large an amount of nutriment, the nutritious properties being increased when it was cut in winter. Dr. Richardson also made many experiments on the fiorin, and highly recom-

mended its culture. It is sometimes called squitch or quick grass, a name applied also to the Common couch grass, and for the same reason,



MARSH BENT GRASS.

that its roots so long retain their vitality as to render it almost impossible to injure them. The Greeks called all grasses by the name of *Agrostis*,

which signified a field. The underground stems of several species of bent are full of a nutritious saccharine matter, and in the south of France and Italy, the poor people collect them from the road-sides and hedges, and make them into small bundles, which they sell in the markets as food for horses. It has been thought that they might, when fermented, be useful in making beer. The Kalmuc Tartars weave their mats of the culms of a species of this genus very common in their land.

A very pretty species of this genus, the Silky bent grass (*Agrostis spica venti*), though rare, is sometimes found on sandy fields near London, and also in different parts of Norfolk and Lancashire. It is indeed a beautiful object, as its full panicle, which is wavy and glossy like silk, bends before even the slightest motion of the wind. But more ornamental than even this, is that silky graceful grass generally enumerated among our native grasses, though probably not truly wild in any part of our land. It is, however, a very frequent ornament of the garden, and is a native of dry places in southern Europe. This is the Feather grass (*Stipa pennata*). Its plume-like tuft has been well compared to the magnificent feathered tail of the bird of Paradise, and we often bring it from the garden to deck the mantel-piece in winter. Like the plumes of

the bird, too, it has been used as a personal ornament, and it once waved over the brow of the courtly dames when fully attired in the dress of



FEATHER GRASS.

state. Its botanic name is derived from a Greek word, signifying silky, which well describes its texture.

Waving, too, like this to every wind, shaken even by the approaching footstep, is that well known and pretty plant called the Quaking or tottering grass (*Briza media*), which our old

writers named Pearl grass. Its botanic name, taken from a Greek word, signifying to balance, is expressive of its delicate and nicely-balanced spikelets, suspended on the most slender stalk,



QUAKING OR TOTTERING GRASS.

so that the whole plant is tremulous. These flat spikelets are very smooth, of a shining purple tint, and more or less green or greenish white at the edges. It is very frequent in meadows and

pastures. It has a bitter flavour, and where it is abundant it indicates that the soil is poor. If the seed of this grass be carefully dissected and examined under a microscope, the young plant, with its roots and leaves, will be found to be perfectly formed there.

There is a grass so rare in Britain that few, even of our botanists, have looked upon it, but it has been found growing wild in a narrow mountain valley, called Kella, in Angus-shire. This is the Northern holy grass (*Hierochloe borealis*), which takes its name from the uses to which it is applied in some parts of the Prussian dominions. It is there dedicated to the Virgin Mary, and strewed before the church doors and in the aisles on festival days, just as the Sweet flag is used in the cathedral of Norwich, for strewing on the floor. The odour of this grass is very pleasant, resembling that of our vernal grass. In Iceland it is gathered and laid in bundles among linen, to perfume it, and it is also hung up in rooms for the same purpose.

Another of our rarer grasses, though one which is found in several places in our island, the Creeping dog's-tooth grass (*Cynodon dactylon*), is also interesting from the association connected with it in Eastern lands. It grows on sandy shores, and has been found on those of Cornwall, near to Penzance. It is a nutritious grass, but of small

importance in our land, where so many valuable grasses grow on every pasture. In Hindoostan, however, where there is but little herbage for cattle, and where every addition to pasturage grasses is of some value, it is highly prized. Dr.



CREeping DOG'S-TOOTH GRASS.

Jacobs, in his "Flora of Cornwall," remarks that this has been "clearly ascertained to be the *dúr-vá*, or *dúb* grass of the Hindoos, of which Sir William Jones says—'Its flowers, in their perfect state, are among the loveliest objects of the vegetable world, and appear, through a lens, like minute rubies and emeralds in constant motion

from the least breath of air. It is the sweetest and most nutritious pasture for cattle, and its usefulness, added to its beauty, induced the Hindoos, in their earliest ages, to believe that it was the mansion of a benevolent nymph. Even the Veda celebrates it, as in the following text of the A' t'harvana. May Dúrvá, which rose from the water of life, which has a hundred roots, and a hundred stems, efface a hundred of my sins, and prolong my existence on earth for a hundred years!'"

But leaving unnoticed the greater number of our more rare grasses, we must return to those which we cannot fail to see in our country walks. We have several oat grasses in our corn-fields, and on our meadow lands. A very common one is that large Wild oat (*Avena fatua*), which springs up in the corn-fields, and is so similar to the cultivated species, that some botanists think it is the same plant. Its florets have long twisted awns attached to them, which constitute an excellent hygrometer, as they are affected by even the slightest change in the atmosphere. This grass is remarkable for the length of time during which its seeds will lie in the earth without losing their vegetating power. The seeds are used as artificial flies in fishing.

Singularly as the awns of this wild oat are twisted about during damp weather, yet the spe-

cies called Animal oat (*Avena sterilis*), a native of Barbary, has even more obvious hygrometrical



WILD OAT.

properties, and is on this account often cultivated in gardens. After the seeds have fallen off, the

strong awn is so sensible of alteration in the atmosphere, as to be perpetually in an apparently spontaneous motion, when it resembles some grotesque insect crawling on the ground.

We have seven species of wild oat, and one which is very frequent on our dry meadows and pastures, the Yellow oat grass (*Avena flavescens*) may easily be distinguished from the others by its smaller flowers. Our engraving represents it as it appears during the month of July.

Then we have, besides, grasses which resemble the wheat, and are called wheat grasses. Three of these grow on the sandy shores of our island, but two of them are very common plants on our inland places. One of these, the Common quick, couch, twitch, or dog grass (*Triticum repens*) is one of the most troublesome weeds with which our agriculturists have to contend. It is very abundant on many arable lands, and most difficult of extirpation, on account of its long creeping roots, which will retain



YELLOW OAT GRASS.



COMMON DOG GRASS.

their vitality amid many injuries. It may be

found on almost every green place in our land, flowering throughout the summer months; nor is it less frequent in other parts of Europe, for it grows in almost all European countries, and even in Siberia. The roots are very sweet and nourishing, and cattle and horses are fond of them.

Sir Humphrey Davy found them to contain nearly three times the nourishment of the stalks and leaves.

Every English child knows the common grass, so like the cultivated barley of the field, that he can immediately recognise it as the Wild barley (*Hordeum murinum*). This plant, which in England grows by every roadside, on walls, and on waste grounds, is a rare grass in Scotland, as indeed are all our uncultured



WILD BARLEY.

species of barley. In some places this is called Squirrel-tail grass, and its prickly awns are so injurious to the mouths of horses, that in the Isle of Thanet, where it abounds, one of the greatest recommendations of an inn, is the having "hay

without any admixture of squirrel-grass." These awns will, on a slight friction, propel the plant rapidly along, as country children well know; for they are in the habit of placing an ear of this grass in the sleeve at the wrist, which, in the course of a few minutes, will make its way to the shoulder.

There is a species of barley called the Meadow barley (*Hordeum pratense*), very common in our moist pastures and meadows, which, in its appearance, resembles rye: and we have, on some of our coasts, a Sea-side barley (*Hordeum maritimum*). It is the smallest of our three native species, and is found also sometimes on light sandy pastures near the sea.

The grasses which are cultivated in our corn-fields for their seeds, the cereal grasses as they are termed, are certainly not less important than those valuable species which form the meadow turf. In what countries these plants may be found truly wild we know not. In the course of culture, they have probably become so altered from their original condition, that we cannot now identify them with the wild species.

If the sight of the green sward can awaken in our minds thoughts of beauty, and of calm repose, as it lies stretched out in the sunshine, so too, the corn-fields of our own or other lands are a goodly sight, and are suggestive of many a pleasant

reflection. Beautiful they are during the spring and early summer, in their rich green hue, when all is bright about them too. Clare describes the country at this season, and depicts the village school-boy as lingering on his way, attracted by the sweet scenes of May time.

“ Young lambs seem tempting him to play,
Dancing and bleating in his way ;
With trembling tails, and pointed ears,
They follow him and lose their fears ;
The birds that sing on bush and tree,
Seem chirping for his company ;
And all, in fancy's idle whim,
Seem keeping holiday but him :
He lolls upon each resting stile,
To see the fields so sweetly smile,
To see the wheat grow green and long,
And list the weeder's toiling song,
Or short note of the changing thrush,
Above him, in the white-thorn bush,
That o'er the leaning stile bends low
Its blooming mockery of snow.”

Nor are our corn-fields less pleasing to the eye and heart, when, in full summer, they are clothed in richer brown, and their tint is varied by the scarlet poppy, or the rich azure of the starry succory, or the clear purple of the corn cockle. Many of our grasses, besides those regularly cultivated, afford seeds equally nutritious, but they are smaller in size. Indeed, when we consider how small the grains of corn are, it seems

wonderful that man should have ever cultivated the cereal grasses as a source of food. No doubt the earliest cultivators were influenced in their choice of plants by the social nature of the grasses. And so observing men, finding that the plants which bore these nutritious seeds grew together in large numbers, sowed them on lands where they were wanting, where they could protect them from injury, and gather them in their season. It may be, however, that the use of these grasses was among the things which Adam learnt of his Maker, since Cain was a tiller of the ground; and very early in Scripture history we read of the bread and the wine.

Wherever, now, we see a corn-field waving in beauty, whether it be in the far distant climes of the east or west, or whether it be by the quiet homesteads which lie among the hills and valleys of our native land, it tells of peace and civilization, and domestic happiness—it tells of homes. The men who sowed the grains from which spring those towering blades, are not wild wanderers over the earth. Man must have a spot to call his own, ere he will rise early and sit up late to sow the seed, or to gather-in the ripened fruit; and the sowing of the earth brings with it softer manners, and gradual improvement in the arts and sciences of civilized life. The house is reared, and children learn beneath its roof, the love of

kindred, and of neighbours, and of country. All nations have recognised agriculture as the source of national prosperity, and the rude traditions, or classic tales, which in different lands ascribe to divinities the introduction of corn plants, recognise this fact. In China an annual festival is kept, in which the Emperor, holding the plough, traverses his garden at the north gate of Pekin, accompanied by a train of courtiers, while in the different provinces of the empire a similar ceremony is performed by some high official person.

The chief cereals which are planted in our land are, Wheat, Spelt, Barley, Rye, and Oats, and these grains are more or less cultivated throughout Europe, and the adjacent parts of Asia; while in the south-eastern portion of Asia, rice and millet are chiefly reared. Maize is the principal corn plant of America; and the Indian millet and the thick-spiked eleusine are cultivated both in Japan and in the different countries of Africa. In many parts of the last-named portion of our globe a species of the meadow grass (*Poa*) is sown for bread corn.

The wheat is the most valuable of the cereals, furnishing not only a better and more nutritive bread, but yielding a greater proportion of flour than any other. Of the Common wheat (*Triticum æstivum*), several others, as the summer and winter, white and red kinds, are only varieties;

but the Spelt (*Triticum spelta*), appears to be a distinct species. It is more hardy than common wheat, and will grow well on elevated soils where that grain will not ripen. Besides the great use of the different kinds of wheat in supplying us with one of the chief articles of diet, and forming a bread, which, from its very tastelessness, may be eaten continually without palling the appetite, it supplies us with starch, straw for thatching, for litter for horses, and for hats and bonnets. The best straw for plaiting is produced by wheat grown on the chalky soils about Dunstable, where, as in many other places, the poor people earn their livelihood by preparing it for hats. The culms of other grasses afford a good straw for the same purposes. Rice-straw bonnets are well known to our feminine readers, and the Leghorn hats and bonnets are made from the straw of a beautiful variety of wheat, which, in its appearance, much resembles our rye. This plant is pulled while yet green, and bleached, like flax, by laying it to steep in the bed of the river, and then drying it in the sun. Our English bonnet plaiters split the straw before using it, but that which forms the Leghorn hats is plaited whole, and this accounts for the less brittle and stronger texture, and the greater durability of the foreign manufacture.

Rye (*Secale orientale*) is little sown in Britain,

though cultivated as a bread corn throughout the north of Europe ; but large spots of our land are, during the early summer, made green by fields of barley. There are several species of this plant, but that which we see most frequently is the Two-rowed barley (*Hordeum vulgare*.) The chief purpose for which those large barley fields are waving their myriads of prickly ears, is that of making malt ; but the grain furnishes also flour and groat, and pearl barley. This last material is used in soups, gruels, and various preparations for the sick-room, and puddings are made of barley flour. The thin cakes which are also made of it, and which, when toasted, are eaten with butter and honey, or with cream and sugar, are a favourite addition to the morning meal in many a Scottish home.

Barley was cultivated by the ancient Romans as food for cattle, and also as supplying bread for the army ; while the gladiators were called *Hor-diarrii* from feeding on this grain. But older than Roman records tell us of its culture and use as food for man, and from earliest ages we know that barley bread was, as it now is, the common diet of the people of Palestine. It is frequently mentioned by the writers of Scripture, and the touching narrative of the noble-hearted Ruth, represents her as gleaning in the field after the barley harvest. Modern travellers see its brown

ears ripening over the ancient land, as they still wander over scenes made so interesting to every Christian heart, by their association with the histories and events recorded in the Word of God.

Of the native land of the barley no account can be given. Various travellers have thought that they had discovered it growing wild, but if we cast the seeds of the cultured plant by the wayside, it will bear only such seeds as will not germinate, so that a succession of crops can be secured only by care and culture, and it has probably never yet been discovered in a wild condition. This grain admits of cultivation under a wider range of climate than any which has been taken under the care of man. Bara is the Celtic word for bread, and hence our English name of barley.

Equally unknown to us is the native land of the oat. The most frequently cultivated species, the Common oat (*Avena sativa*), is a familiar object in our native fields; and many writers think that this, as well as two other species sown on our lands, is the same plant as the large wild oat which droops so gracefully on our corn-fields, and field borders, and which was figured on a preceding page. The oat, though sown chiefly for horses, yet is more or less used as a bread corn in lands where it is cultivated, while the oatmeal porridge is a dish of the Scottish cottage, and the oaten groat is well known to us all as an ingredient

for gruel. The Hill oat or Peel corn (*Avena nuda*) was, in former days, much sown in the north of England, and in Scotland, and Wales. It was preferred to the common oat, because the kernel came out cleaner from the husk, and did not require to be carried to the mill or grist. The grain of the hill oat still lies to dry on the Highland hearthstone, and is taken thence to be bruised in a stone mortar. But time has brought its usual changes to the cottage of the Lowlands of Scotland, and this homely practice is quite disused, while the quern-mill has become as useless as the old spinning-wheel of our English houses, and if retained, is kept only in memory of old usages, or in loving recollection of hands which once guided it, but which have now mingled with the dust. In villages, however, where these quern-mills were once in general use, many of them may be seen lying in the gardens, or about the doors of cottages, in a neglected or dilapidated condition.

But turning from the cereal grasses, which on our own lands bow down before the wind into graceful waves, we must notice the fields of rice of Asia, the only grass which in that land remains so long verdant as to whisper to him who comes from northern climates, a thought of his own green fields. The rice mostly cultivated is that common species *Oryza sativa*, of which there are

many varieties. Probably no grass reared by man supports a larger number of people than this; and the Asiatics cook it in such various ways, that a great number of dishes appear at the wealthy man's table, in every one of which the rice is a constituent. In our country, though used commonly for puddings, and for forming part of a luxurious diet when mingled with fruits and spices, yet it is not so much valued for ordinary food as it deserves to be. The very circumstance of its easy digestion renders it a less welcome food to the poor, because hunger so much sooner follows after the meal of rice than that of potatoes. The rice is a tall and handsome grass. It is sown extensively, not only throughout the greater portion of Asia, but also in some parts of Germany and Hungary, and some crops of it have even been reared in our own country, but the best rice is imported from Carolina. There are species which grow on light soils, but the greater number of the rice fields of China and India are planted on low grounds, on the margins of large rivers, which are annually inundated. Thousands of poor labourers are engaged in cultivating these lands, and spending sometimes whole days partly immersed in water, and living among the exhalations of marshy lands, they suffer from a variety of diseases, and often have to yield their lives in this attempt to gain their livelihood.

The native land of the rice plant is not satisfactorily ascertained, but Meyen quotes Von Martius, as having found wild rice fields on the Rio Madeira, from which the inhabitants of that country gathered nearly as good a crop as is yielded by the cultured grounds. There is a plant commonly called Wild rice, or Canada rice, the *Zizania aquatica* of the botanist, which is not, however, a species of rice. It grows on the margins of ponds, and is abundant in all the shallow streams of North-west America. This grass is exceedingly prolific of nutritious seeds, from which a good flour is procured. The seeds are the chief support of numbers of wandering tribes during the winter, and immense flocks of wild swans, geese, and other water-fowl, feed upon them. Pinkerton says that this plant seems intended by nature to become the bread-corn of the north.

Millet (*Panicum miliacium*) is occasionally cultivated in this country for puddings, or for feeding poultry, but the millet field is not a common object on our landscape, as the climate scarcely suits it, and it is so abundantly sown on the shores of the Mediterranean that we can obtain a sufficient supply from thence. It is a handsome grass, tall and slender, and with a light and delicate panicle of flowers, but it cannot rival in beauty the graceful arborescent millet of the East Indies,

**MILLET.**

which rises up among the tallest of forest trees,
and its slender stem shooting up among their

boughs, it sometimes waves its plume-like panicle above the topmost twigs. Nothing can exceed the grace of this plant, for its stem is not thicker than a goose-quill, so that every wind bids it quiver ; and yet the storm sweeps over the forest and breaks down many a sturdy tree, while the grass waves on, if it chance to have grown amid the protecting shelter of some stronger clump of the towering pyramids of the forest. Several species of millet are used throughout the south and east of Asia.

The Indian millet (*Sorghum vulgare*) is the plant cultivated in Africa. It is the *grand millet* of the French, and is also much grown in Arabia, and in most parts of Asia Minor, as well as in the East and West Indies, and in some parts of North America. This grass, too, is a tall and conspicuous object on the landscape, though it does not long retain the verdure of its young green blade. Burckhardt saw it in Nubia sixteen feet high, but it more commonly attains the height of about six feet, and its awns are so thickly bristled as to defend it from birds. Its grain is so much used by the negroes as food, that it has obtained the name of Negro Guinea corn. We read of this millet continually in books of travels in the East, under the name of dhura, by which it is known throughout Egypt and Palestine. Besides being made into bread, it is also

roasted and eaten, and sometimes one plant will produce enough seeds to furnish a meal to a whole family. Some writers have thought that this was the parched corn which Boaz gave to Ruth, and which David carried to his brethren when they were in the valley of Elah fighting with the Philistines. Its spikes are often made into brooms, and the housewives of our own country use them to sweep their carpets, as they are imported hither for that purpose. The seeds are also used for feeding poultry and tame birds.

The Thick-spiked eleusine (*Eleusina coracana*) is a grass much sown in some parts of Africa for its edible seeds; and another cereal cultivated in that land, is the Smooth upright meadow grass (*Poa Abyssinica*). The seeds of this grass furnish the common bread of the poor people of Abyssinia; the richer classes only being able to procure wheaten bread. This common bread is called teff, and the cakes made of it are easy of digestion, but little palatable to those who are unaccustomed to this diet, for they are white and spongy, and have a pungent, and somewhat sour flavour. This plant furnishes not only the bread but the beer of the land.

The plant so extensively cultivated in America, the Maize (*Zea mays*), is a familiar object to our eye, because it is so often planted in our gardens for its beauty. It is frequently above six feet in

height, and the strong leaves which enclose the large husk of seeds are very graceful, and most delicately soft on their inner surfaces. Suspended



MAIZE.

from the ear hangs a tassel of green threads, soft and glossy as the most beautiful silk, which add much to the grace of the ripening plant. Cattle are remarkably fond of the maize. It will grow in any country whose latitude is not beyond

forty-six degrees. Its culture in our land has not been successful.

There is a very beautiful species of Maize called the Valparaiso Cross corn, which has something of a superstitious veneration attached to it, because the grains, in roasting, split regularly into a cross.

Besides the cereal grasses, those plants from which civilized man in all countries derives his chief source of food, there are some other plants of the grass tribe cultured for yielding him various sources of comfort and luxury. The chief of these is the Sugar-cane (*Saccharum officinarum*). Sugar, from having been originally a luxury for the few, has, in the course of centuries, become almost the necessary of the many. Scarcely a meal is taken but we use it in some form or other, so that we wonder how our fathers contrived to do without it. It may be procured from various vegetables, for it exists in most plants; and the carrot, the parsnip, the birch, the grape, have all yielded it, though in less quantity than the sugar maple and the beet-root.

The sugar-cane, however, furnishes it in greater abundance than any other plant. Sugar was in use in England in 1466, but chiefly at banquets, and in medicines, till it was brought from the Brazils, about 1580, to Portugal, and thence imported hither, and in about the years 1643-4, the

English began to make it in Barbadoes and Jamaica.

The sugar-cane is a tall and handsome plant, about ten feet high, and its silver-coloured tufts of flowers are described by travellers as exceedingly beautiful, though we cannot get them to blossom in our land. Growing wild, as this plant does, on the banks of rivers, in grassy places, and among jungles, it adds much to the beauty of the scenery in the East Indies, in China, and many parts of Africa, where it is plentiful. Nor is its waving crest wanting in the South Sea Islands, or in the tropical parts of South America, where like all the vegetation of the land, it seems to have a tendency to rival the very trees, and grows to a great height.

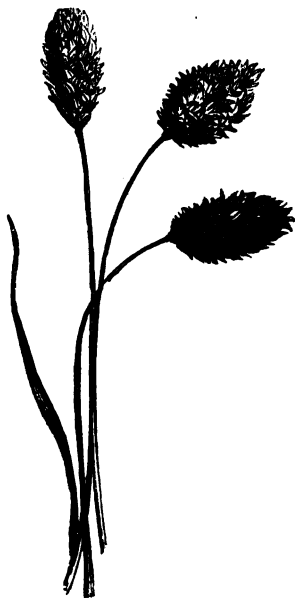
Besides the continual uses of sugar at our tables, it is valuable in medicine and distillation, and in various manufactures. It was of old used in preserving animal and vegetable substances from decay, for Gerarde, who wrote in Queen Elizabeth's time, says that it is useful "in conserving of sundry herbes and floures, as roses, violets, rosemary floures, and such like, which still retain with them the name of sugar as sugar roset, sugar violet, &c." As yet the English had not learned to drink at the daily meal the refreshing tea and coffee, and therefore the use of sugar was limited indeed compared with its uses now.

But indispensable to our comfort as is the produce of this plant, yet in tropical countries not only is the raw sugar from the cane largely consumed, but the unprepared cane itself is of use too. The ripe shaft of the plant, after having been made soft by boring, is chewed and sucked by the poor; and so nutritious is the juice, that this affords many a meal sufficient to satisfy the languid appetite of people of hot climates. Vast quantities of raw sugar-cane are consumed in this manner; and Meyen observes that large ship-loads are daily brought to the markets of Manilla and Rio Janeiro, while in the Sandwich and some other islands, every child one meets with has a piece of sugar-cane in his hand.

The only sugar esteemed in the East is the sugar-candy, which is made by crystallizing the syrup procured by boiling loaf-sugar.

But quitting this valuable tropical grass, we must turn to one which is of comparatively little worth, though in its way yielding, too, its service to man. The Canary grass (*Phalaris canariensis*) is sometimes planted in large fields in our land, especially in the Isle of Thanet, as food for canaries and other singing-birds, whose notes afford delight to many, though others see them caged with regret, and think the tones of a captive bird have a sadness even amid their mirth. In many places, both of England and Scotland,

this canary grass has become naturalised, and may in July be gathered from among our corn, or on the



CANARY GRASS.

field borders, or waste places. It has broad leaves and handsome spikes of flowers, the yellow green calyx leaves of which are marked with dark green lines. The canary seed, as we see it in the bird-cage, is not the seed only, but it is closely in-

vested with the dried flower of the grass, which occasions its pointed form and glossy appearance.

And thus we see that earth is green with many grasses, far more than we can number in these limited pages, for nearly two thousand species have as yet been discovered, and probably many a beautiful grass is yet unknown to us. We tread on the green turf in the joyous hours of childhood, and delight in its loveliness when time and thought have matured our taste for grace and beauty. The waving corn-field gives its nutriment to support us from the cradle to the grave ; and the green sod covers the remains of those whom we love, and shall in turn cover ours. The grasses of God's green earth wave not idly. They have many benefits to confer on man, and not the least of their uses is their beauty, and the calm and cheerful thoughts which they awaken. If God has given us healthy bodies and sound minds, let us wander away sometimes to the green fields, that the cheerfulness of Nature may lend its colouring to our thoughts, and carrying away from waving grasses and flowery meadows a song of gratitude, let us sing it, too, in our homes.

THE END.



